

REMARKS/ARGUMENTS

Claim 9 has been amended to correct a typographical error. Support for the amendment is found at specification page 4, paragraph [0016]. Support for new Claims 17-18 is found in previously presented Claim 4. No new matter has been added.

The rejections of Claims 1-16 under 35 U.S.C. 103(a) as being unpatentable over Japanese Patent 07-330312 by Koyama et al, in view of Akiba (US Patent No. 6,503,473), Delmas (US Patent No. 6,455,022), Takada et al. (US Patent No. 6,022,640) and Kugai et al. (US Patent Pub. No. 2004/0109940) are traversed.

Applicants disclose a method for purifying a lithium sulfide, particularly wherein lithium sulfide obtained by reacting lithium hydroxide with hydrogen sulfide in an aprotic organic solvent is washed with an organic solvent at a temperature of 100°C or higher as in Claim 1. Applicants further disclose the purified lithium sulfide wherein a total content of sulfur oxides is 0.15 % by weight or less as in Claim 4. Additionally, the total content of sulfur oxides of 0.15 % by weight or less is achieved by the method as in new Claim 17.

Koyama discloses a method of producing a lithium sulfide. However, as the Office recognizes, “[K]oyama is silent with regards to a washing temperature of 100°C or higher” (See, Office, Action, page 3). Additionally, Koyama does not disclose or suggest the lithium sulfide wherein the total content of sulfur oxides is 0.15 % by weight or less as in Claim 4 and new Claim 17.

The secondary references cited do not cure the deficiencies of Koyama.

As to Akiba, Akiba discloses hydrosulfurizing a lithium hydroxide in bubbling gaseous hydrogen sulfide through an aprotic solvent at a pressure of 0.1 MPa to 0.2 MPa while suppressing production of a lithium sulfide (See, Akiba, Abstract and Claim 1). Akiba further discloses washing a lithium hydrosulfide obtained by the hydrosulfurization with a large amount of NMP at 130°C to increase the lithium-recovering rate to 99% (See, Akiba,

Col. 7, lines 50-66). Additionally, Akiba discloses washing a mixture of lithium hydroxide (85.5%) and lithium sulfide (14.5%) with a large amount of NMP at 100°C and further shows that washing the mixture with the large amount of NMP at 100°C does not achieve the lithium-recovery rate of 99% in the presence of lithium sulfide (See, Akiba, Col. 9, lines 9-22 and Comp. Example 2). Importantly, the mixture of lithium hydroxide (85.5%) and lithium sulfide (14.5%) is not the lithium sulfide obtained by reacting lithium hydroxide with hydrogen sulfide in an aprotic organic solvent as in Claim 1.

On the contrary, Applicants further show that the lithium sulfides obtained by methods other than the method as in Claim 1 do not achieve the sulfur oxide content of 0.15 wt % or less as in Claim 4 and new Claim 17 when the lithium sulfide prior to washing has a larger amount of impurities than that of the lithium sulfide obtained by reacting lithium hydroxide with hydrogen sulfide in an aprotic organic solvent as in Claim 1 (See, specification, page 14, Table 1, Comp. Examples 4-6 and paragraph [0045], and page 15, paragraph [0050]).

Notably, the mixture of Akiba has 85.5% of lithium hydrosulfide which is too large to be called an impurity. Furthermore, Akiba does not disclose or suggest washing the lithium sulfide obtained by reacting lithium hydroxide with hydrogen sulfide in an aprotic organic solvent with an organic solvent at a temperature of 100°C or higher as in Claim 1. Additionally, Akiba does not disclose or suggest the lithium sulfide as in Claim 4 and new Claim 17.

Thus, in light of teachings of Koyoma in combination with Akiba, one of ordinary skill in the art would not have foreseen the method as in Claim 1 and the lithium sulfide as in Claim 4 and new Claim 17.

The secondary references to Delmas, Takada and Kugai do not cure the deficiencies of Chang in combination with Akiba.

Delmas discloses an aqueous alkali metal chloride solution; Takada discloses a solid-state secondary lithium battery; and Kugai discloses a method of producing a negative electrode. However, none of Delmas, Takada, and Kugai disclose or suggest 1) the lithium sulfide obtained by reacting lithium hydroxide with hydrogen sulfide in an aprotic organic solvent; 2) washing the obtained lithium sulfide with hydrogen sulfide in an aprotic organic solvent with an organic solvent at a temperature of 100°C or higher as in Claim 1; and 3) the lithium sulfide wherein the sulfur oxide content is 0.15 wt % or less as in Claim 4 and new Claim 17.

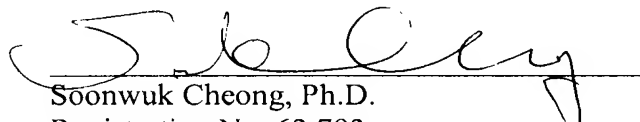
Therefore, Chang in combination with the secondary references cited cannot render obvious Claims 1 and 4 and the dependent claims therefrom.

Withdrawal of the rejections is respectfully requested.

Consequently, in view of the present amendment, no further issues are believed to be outstanding in the present application, and the present application is believed to be in condition for formal allowance. An early and favorable action is therefore respectfully requested.

Respectfully submitted,

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